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Abstract

The Ccnservaticn and Envircnmental Science Center for Southern New Jersey (CESC) has develcped this manual for college participants in environmental education prcgrams. The program and purposes of the CESC are described in scme detail. This manual is designed to be used with college practicum groups who utilize cne week cf a quarter during the Junicr year for educaticn in the cut-cf-dcors. Topics considered in this manual include: (1) advantages cf a practicum prcgram; (2) proposed model for an undergraduate training program; (3) regulaticns fcr participants; (4) guides and forms tc be utilized; (5) origin and purposes of the program; (6) sample lesscn plans; (7) a proposed CESC complex; and (8) planning environmental educaticn experiences at a practicum center. An article included in this document written by Frank G. Patterson, "Parents - A Dichotcmy Between Dcllars and Dreams," provides an envircnmental instruction plan for the upper elementary cr junicr high grade level. Related documents are RC 003 788, RC 003 789, RC 003 791, and RC 003 792. (SW)

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Manual for College Participants in Environmental Education Programs

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
for SOUTHERN NEW JERSEY
R.D. 2, Box 2230
Browns Mills, N.J. 08015

IN COOPERATION WITH:

GLASSBORO STATE COLLEGE

RC003790

ED033786

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CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

Manual for College Participants in Environmental Education Programs

TABLE OF CONTENTS

Foreword

Environmental Education in the Pine Barrens
Advantages of a Practicum Program
Undergraduate Training Program
Clothing Information
Regulations for Participants in Programs
Guide for Cruisers
Health Information
Origin and Purposes
Whitesbog - '71
Planning Environmental Education Experiences at a Practicum Center
Forests
Materials Request Form
Teachers Workshop Handbook

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

MANUAL FOR COLLEGE PARTICIPANTS

in

ENVIRONMENTAL EDUCATION PROGRAMS

This book is intended to describe in some detail the program and purposes of the Conservation and Environmental Science Center for Southern New Jersey (CESC).

Hopefully the reader will be assisted in developing college level programs at CESC. It is especially hoped that college participants who are preparing for teaching will take time to consider the pressing need for environmental education in the schools and colleges.

Environmental education anywhere seeks to create a concern for all environments that leads to a commitment to preserve optimum environments and improve less desirable environments. The resident environmental education program affords this opportunity for one or more environments.

In addition, environmental education concerns itself with the learning environment. What environmental education seeks is a commitment by educators to develop and utilize situations and conditions where learning can flourish.

All suggestions for improving this manual are welcome.

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

ENVIRONMENTAL EDUCATION in the PINE BARRENS

Since 1960, practicum groups have been utilizing one week of a quarter during the Junior year for education in the out-of-doors.* In recent years, outdoor education has broadened its concepts and concerns and evolved as Environmental Education.

An emphasis of environmental education is the development of a concern for all environments, rural or urban, through direct experiences, as well as through discussion and demonstration. A parallel and equally important thrust of environmental education is a concern for the environments where learning can occur. This is the compelling reason for involving the practicum with environmental education. The paramount concern of the practicum is the nurture of favorable learning environments.

The opportunity is now available for developing a practicum experience to seek the achievement of these objectives more positively at the Conservation and Environmental Science Center for Southern New Jersey (CESC).

The CESC is located in the Pine Barrens, 46 miles from Glassboro, at the well established and recently modernized complex known as the Methodist Conference Center at Mt. Misery. Each school week, two classes from one or two districts (either elementary or secondary), will be participating in a five-day resident environmental education program (REEP). Resident programs are planned weeks in advance by the classroom teacher, who has participated in an environmental education training workshop, at Mt. Misery, working in cooperation with a CESC staff member. At CESC, teacher assistants and the entire CESC staff assist with the REEP.

There will be room at the CESC to accommodate one practicum class during such REEPs. The practicum group has the option of dining separately or with the school youngsters, as the participants choose.

The environmental education program will be developed by the practicum coordinator and the practicum class with the able assistance of Donald Pierpont, Environmental Education Coordinator, Glassboro State College; V. Eugene Vivian, CESC Director and Professor of Science, Glassboro State College; and the CESC staff.

**Called the Outdoor Education or Stokes Experience, almost all practicum students spent their week at the N.J. State School of Conservation, near Branchville, in Stokes State Forest, (a distance of more than 125 miles from Glassboro State College, and approximately a four-hour drive).*

ADVANTAGES OF A PRACTICUM PROGRAM
at the
CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

The Conservation and Environmental Science Center:

1. provides a staff of eight persons engaged full time in environmental education. This provides a minimum of nine sessions (morning, afternoon or evening) directed or led by a CESC staff person.

2. provides contact and teaching opportunities with sixty youngsters in a productive and unique teaching environment.

3. provides opportunity to assist in planning and evaluation of instruction at the elementary or secondary level in environmental education.

4. provides a proximity to Glassboro State College which affords:

    a. travel time reduction to one-third (75 minutes).

    b. availability of college staff for one-day or half-day leadership roles.

5. provides a more varied program in environmental education.

6. provides availability of "tailor made" programs for each major.

7. provides opportunity to study Pine Barrens ecology, Pine Barrens sociology (forgotten towns), and Pine Barrens agriculture ("company town" of Whitesbog).

8. provides opportunity to study a systems analysis approach to evaluation and the evaluation of behaviorally stated objectives.

9. provides new curricular materials in environmental education developed by CESC staff.

10. provides opportunities for practicum participants to explore development of curricular materials in their particular major.

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

Undergraduate Training Program -- Proposed Model

The following is a proposed instructional model for use by college practicum groups while in session at the CESC. The model is designed to permit maximum flexibility for the different practicum majors anticipated to be in residence at the CESC.

Monday - Morning -

Arrival and sleeping area assignments will take up the first 45 minutes. The balance of the morning will be devoted to a general introductory session to include:

- a definition of environmental education
- the need for environmental education in the total curriculum
- the CESC approach to environmental education

Monday - Afternoon -

- Environmental experiences. A 2 1/2 hour college level activity presenting possible outdoor learnings using one or more CESC instructional models.

- A one-hour indoor session devoted to describing and discussing models for environmental instruction with special reference to the practicum group's early afternoon outdoor experience.

- Organization of individual assignments for practicum's participation with the elementary or secondary environmental education program currently in session.

Monday - Evening -

- The earlier portion (possibly 7 to 8:30) should include a special guest lecturer, preferably someone not directly identified with environmental education.

- The later portion of the evening may be used for social activity in an area selected by the practicum.

Tuesday - Morning -

The morning and afternoon portions of Tuesday, Wednesday and Thursday will have basically the same format, except that only observations are permitted on Tuesday. On Wednesday and Thursday, observation or instruction are options open to members of the practicum group.

- One-half of the practicum group observes or instructs group of youngsters.

- One-half of the practicum group will be involved in college level activities in such areas as the sciences, social sciences, the arts, humanities, etc. The activity is to be decided by practicum coordinators and their specific practicum groups.

Tuesday - Afternoon -

- the activity groups will reverse

- late afternoon can be designated as free time or utilized at the coordinator's and practicum group's discretion.

Tuesday - Evening -

- the earlier portion will include critique and brainstorming related to the morning and afternoon experiences.

- specifically, the first item on each Tuesday evening's agenda will be evaluation in environmental education.

- square and folk dancing, star parties, and other evening activities may follow each evening's critique period.

Wednesday and Thursday -

- Tuesday's format will be followed, except that practicum students will be encouraged to participate in some instruction of small groups.

Friday - Morning -

The first half of the morning should deal with:

- proposals for individual action by practicum students after they leave CESC

- evaluation discussion session reviewing the week's program - its strengths and weaknesses.

CLOTHING INFORMATION

Comfortable, practical clothes are recommended. Shoes should be sturdy. Loafers, sneakers, etc., are useful but good hiking shoes will be necessary for hiking. Students should leave all jewelry and other expensive items at home. Radios, TV's and record players are not permitted. Students should have name tags on all belongings or have their clothing marked. The school cannot be responsible for lost articles.

Starred items are needed in winter or when cold weather is anticipated. If any of these items are difficult for a child to obtain, he or she should report this to the teacher immediately.

The quantities listed below represent the minimum number. It is suggested that this sheet be placed at the top of the student's suitcase to serve as a check list during at-home and at-center packing times.

Essentials

Item:	At-Home	At-Center
Sleeping bag or 3 blankets	_____	_____
Pillow	_____	_____
2 sheets (single) and 1 pillow case	_____	_____
2 bath towels	_____	_____
1 wash cloth	_____	_____
Tooth brush, tooth paste and soap	_____	_____
Comb, brush, nail file	_____	_____
1 pair pajamas	_____	_____
Bathrobe and slippers	_____	_____
4 pair underpants	_____	_____
4 pair undershirts	_____	_____
4 pair socks	_____	_____
2 or 3 pairs of shoes (one pair suitable for hiking)	_____	_____
Rain hat, boots and waterproof raincoat	_____	_____
*Heavy jackets and hats (with ear protection in winter)	_____	_____
Sweater(s) or sweat shirt	_____	_____
Handkerchiefs (4)	_____	_____
Laundry bag	_____	_____
Flashlight	_____	_____
4 changes of clothing (girls pack slacks, *1 woolen pair)	_____	_____
Pocket notebook and pencils	_____	_____

Optional

*Gloves	_____	Canteen	_____
Shirts (girls)	_____	*Chapstick	_____
Shorts (1 pair)	_____	*Sunglasses	_____
Camera	_____	Sun tan lotion	_____
Field glasses (binoculars)	_____	Insect repellent	_____
Small kmapsack	_____	Kleenex	_____

Pocket reference books on outdoor subjects:
(trees, flowers, birds, rocks, etc.) _____

Pocket knife (to be kept by teacher until needed) _____

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

REGULATIONS FOR PARTICIPANTS IN PROGRAMS

The Conservation and Environmental Science Center for Southern New Jersey (CESC) is considered to be a part of the campus of Glassboro State College whenever college students are participating in CESC programs. Students are under the same obligations with respect to conduct while at the CESC as they would be on the home campus.

The following rules apply to activities at CESC:

1. The possession or use of any alcholic beverage is prohibited.

2. The possession or use of firearms (except in authorized programs) and the possession and use of fireworks are prohibited.

3. Students are not expected to have guests or visitors at CESC during the five-day environmental education program.

4. Students are not to leave CESC, except when an authorized program is held away from CESC, without first getting the permission of the college faculty member in charge.

The CESC is located in a natural area in which all plants, animals and historic artifacts are protected; therefore none are to be disturbed, injured or removed, except with permission of instructors during CESC-sponsored programs.

A pay phone is available for college students for all out going calls. It is located in the small building directly behind the dining hall.

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

GUIDE FOR CRUISERS

One Cruiser for each table at each meal -- only one!

Cruisers must be in the Dining Hall 15 minutes before each meal.

Please use the IN and OUT doors to the kitchen at all times.

FIRST: Wash your table and set it according to information posted on the menu board. Then pick up food items on serving counter.

SECOND: After first course (juice or soup) remove these empties. If dishes, return to dishwashing counter in the kitchen. If empty paper cups, deposit in paper container in kitchen. If filled paper cups, return to dishwashing counter.

THIRD: Get hot food in kitchen for your table. Take one dish at a time. These dishes have enough food for one serving for each person at the table.

FOURTH: During meal, if more food is needed, Cruiser goes to kitchen for it. If there is no more food available in the kitchen, you may check nearby tables.

AFTER EATING THE MEAL

FIRST: Return **ALL** unserved food to kitchen food counter, where you picked it up. Do not stack dishes of food on top of other food dishes. This includes the bread tray.

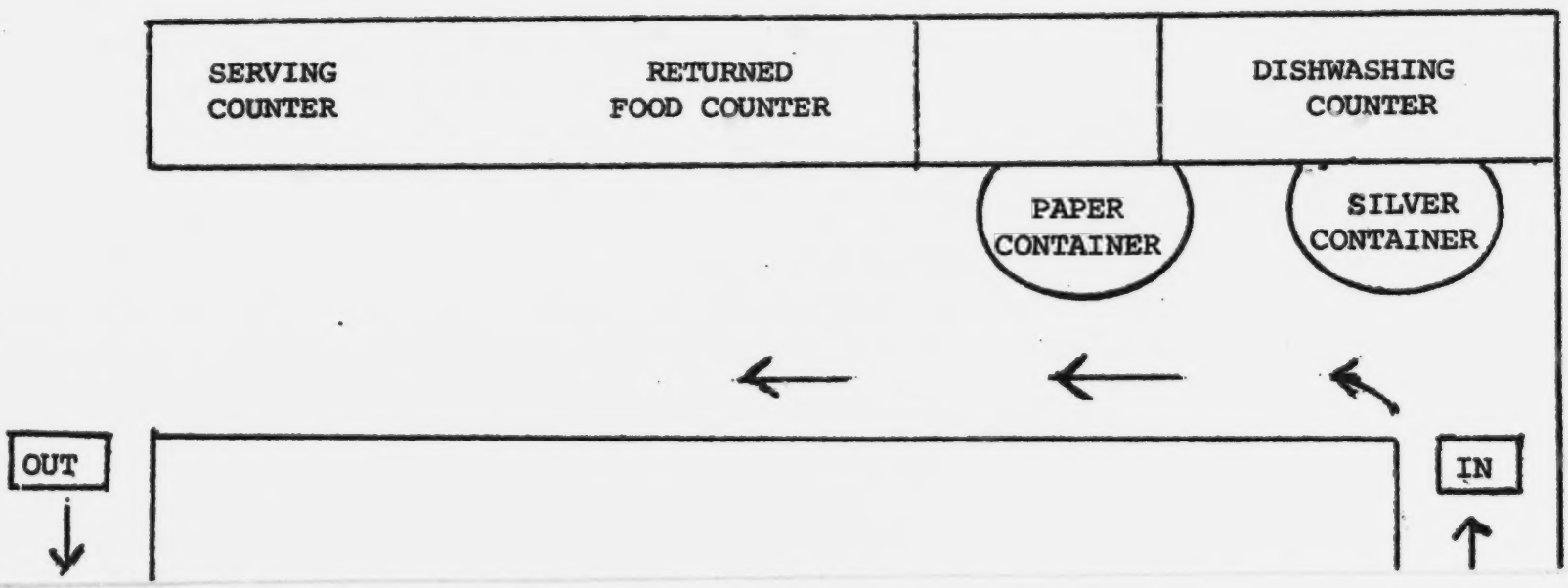
SECOND: Scrape plates. Do not mix food and paper. Return ALL dishes to kitchen, silver to container. Save spoon or fork for dessert.

THIRD: Serve dessert. You pick it up from kitchen and bring it to YOUR table. Take enough for the number of persons at your table.

FOURTH: Remove everything from your table. Salt, pepper, sugar and napkins are placed on table near kitchen entrance. Then, wash your table.

LAST: Sweep floor. Use brooms in left side of closet. Put dust in paper container or waste basket. *We thank you for your help.*

K I T C H E N



HEALTH INFORMATION

Name of Student_____ Age_____

Address_____ Tel._____

Name of Parent_____

Address_____ Tel._____

Business Address_____ Tel._____

Name of Family Doctor_____ Tel._____

1. Has student had polio vaccine?_____ Booster?_____

   Date of most recent tetanus shot_____
   If a tetanus shot has not been administered in the last three years, student should have one.

2. List food allergies, if any_____

3. Is student allergic to any medication?_____
   A. Sulfa_____ B. Penicillin_____ C. Aspirin_____ D. Others_____
   _____

4. Has student been exposed to any communicable diseases in the past 21 days?_____

5. Do you know of any health factor that makes it advisable for student to follow a limited program of physical activity? If so, please describe and state limitations_____
   _____
   _____
   A. Recent surgery or illness?_____ C. Weak ankles or arches?_____
   B. Bones recently broken?_____ D. Other physical condition?_____
   _____

6. In order to protect student from possible embarrassment, this information is needed: A. Does student wet the bed at night?_____
   B. Does student walk in sleep?_____
   C. Are there other factors which may affect the care of student? *(Please explain)*_____
   _____

7. Nervous habits? _____ *(Please explain)*_____

8. Particular fears? _____ *(Please explain)*_____

This information requested is required for each student participating in a resident environmental education program at CESC. The school nurse will inspect the children the morning they leave for the resident center.

Conservation and Environmental Science Center for Southern New Jersey

ORIGIN

PURPOSES

POST OFFICE BOX 2230
ROUTE 2
BROWNS MILLS,
NEW JERSEY 08015
PHONE (609) 893-9151

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

Unique in the megalopolis that stretches from Boston, Mass. to Richmond, Va., are New Jersey's Pine Barrens.

--And unique within the Pine Barrens, that region which nurtures rare flora and fauna, is the Conservation and Environmental Science Center for Southern New Jersey.

The Conservation and Environmental Science Center was originated as an educational program linking Glassboro State College with a consortium of school districts in Southern New Jersey. Funds for the establishment of such a center were provided by grants for planning and operation under Title III, E.S.E.A. (66-2303 and 67-5679) to the school district of Glassboro.

On February 5, 1968, the U.S. Office of Education approved an operational grant in the amount of $237,600 for the initial year of a three-year funded project. The consortium now serves more than 50 school districts and Glassboro State College. The initial thrust of the project includes:

1. Curriculum development for environmental sciences:
   (a) in-service training for elementary and secondary teachers
   (b) resident environmental education programs
   (c) on school-site programs in environmental education

2. Development of a permanent Center
   (a) resident environmental education programs for children and adults
   (b) environmental science and research laboratories for the graduate and the undergraduate levels

The Conservation and Environmental Science Center for Southern New Jersey is staffed by a director, Dr. V. Eugene Vivian; associate director, Emory J. Kiess, Jr.; and six teachers, who serve as environmental education consultants. *CESC* personnel develop curriculum materials, train teachers, teach students, conduct "on school-site" and residence environmental education programs, and present the work of the Conservation and Environmental Science Center to the public.

In curriculum development, *CESC* personnel are working with teachers in the school district for the purpose of using environmental programs within existing curricula. In-Service Programs held both in school districts, and at the resident center, are a focal point of curriculum development. Such programs include direct experiences with concepts in conservation and environmental science and the development and demonstration of teaching techniques and materials.

The "on School-site" phase is implemented with scheduled visits by *CESC* personnel to participating school districts to develop programs (K-12 grade), in the classroom, on the school grounds, and in areas adjacent to the school property. The emphasis is placed on training of the school district teachers rather than on direct classroom teaching by the *CESC* personnel, although the latter may take place as demonstrations.

The resident environmental education program is conducted at the project center, using leased facilities of the Methodist Conference Center at "Mount Misery" near Browns Mills. This location was chosen because of the uniqueness of the Pine Barrens, both historically and ecologically. The resident program is a significant aspect of the project because it is believed that many concepts can be better learned in a resident atmosphere.

The two outstanding features of a resident environmental education program are: the development of a conservation ethic while living in natural surroundings, and the availability of real-life social experiences which "improve" teacher-student and student-student relationship. These gains have been experienced by children in upper elementary grades, college youth and adults participating in the pilot project.

Robert A. Roe, Commissioner of New Jersey's Conservation and Economic Development encouraged the *CESC* to develop a broader base of concern and operation. The Commissioner envisioned a relationship among industry, education and private citizens with a public concern which might best utilize state-owned lands.

The Superintendents' Steering Committee, organized to guide the formation of the *CESC* through the planning and operational phases, approved a proposal to incorporate the *CESC* as a non-profit organization in May, 1968. Incorporation was completed in September, 1968.

The Conservation and Environmental Science Center for Southern New Jersey, Inc., was organized for the reception and utilization of funds solicited for the use of groups of industrial or education institutions.

The broad purposes of the *CESC* are:

1. Develop and maintain facilities for the purpose of promoting research and learning in conservation and environmental science by adults and children in New Jersey.
2. To solicit, receive and expend funds from public and private sources to implement the stated purposes of the Corporation.

Specific *CESC* functions approved by the Board of Trustees are:

1. To operate a program for conservation and environmental science studies.
2. To lease approximately 2,700 acres of state-owned lands at Whitesbog, from the New Jersey Department of Conservation and Economic Development.
3. To receive funds to develop a complex of laboratories, classrooms, library and residence buildings on state-owned lands.
4. Encourage and develop new learning and research programs from colleges, universities, or consortiums of such institutions, and research programs from industries concerned with environmental use or environmental science.

FORESTS

A Dichotomy Between Dollars and Dreams

ENVIRONMENTAL INSTRUCTION
PLAN NUMBER U-1

CONSERVATION

AND

ENVIRONMENTAL SCIENCE CENTER

FOR

SOUTHERN NEW JERSEY

Written By: FRANK G. PATTERSON

Edited By: V. EUGENE VIVIAN
NORMA T. VIVIAN

Designed For:

UPPER ELEMENTARY OR
JUNIOR HIGH STUDENTS

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

Title: Forests - A Dichotomy Between Dollars and Dreams

Grade Level: Upper Elementary or Jr. High

Overview - Before an individual can "care" for something, he must have some knowledge about the object(s) of his concern. If an instructor wishes to promote an attitude for conserving the forest resources, he must first have his students develop their own values about woodlands. This series of lessons is so directed.

Objectives -

Cognitive:

Students are able to:

1. identify at least five important commercial trees
2. measure distance by pacing or other means
3. construct a "Biltmore Stick"
4. determine the number of "board feet" and "saw logs" in a tree
5. estimate the commercial value of a tree

Affective:

1. Pupils can express their feelings or beliefs about the value of forests by one or more means of communication and expression.
2. Pupils can demonstrate an interest in forest conservation by making independent studies of/or visits to such agencies as the: State Bureau of Forests, State Fish and Game Commission, State Forest Fire Service, U.S. Park Service, and other related agencies, U.S. Department of Agriculture Bureau of Forests, U.S. Corps of Army Engineers U.S. Bureau of Reclamation.

Strategy - The following unit of lessons has been organized in such a manner that students, through their everyday classroom subject disciplines, can develop a set of values concerning forest lands. This unit or series is "open ended," and should not be considered completed with the last lesson. Also, there is no strict, sequential order to the specific lessons found in this unit study. The time span is at the instructor's discretion.

Lesson Outline

Lesson 1 - Indoors

Use Joyce Kilmer's poem, "Trees," or other poems or lines about trees.

Develop a discussion to find out:

1. What are students' feelings and concepts about trees?
2. How important is a simple tree in their lives?
3. How important are forests, (groups of trees)?

Assign students to choose a poem, novel, story and/or essay, which describes or emphasizes some characteristics of trees which are desirable or important.

Lesson 2 - Outdoors - Techniques in Observing Trees

Have students observe five different types of trees by taking note of the trees: size shape, color, odor (if any), bark texture and leaves. The size shape, color, odor (if any), and texture of each tree's leaf should be observed and noted.

Have students make a rough drawing of each tree's leaf design.

When students return to the classroom, have them use simple pictorial references to identify the kinds of trees they observed.

Lesson 3 - Indoors - Group research projects on various types of trees and their economic value and use.

Examples:

a. value of an acre of softwood when lumbered? *
b. value of an acre of hardwood when lumbered?
   - harvested periodically for:
      (1) Xmas trees
      (2) firewood
c. value of an acre of land used for recreation such as picnic area?

*Use Bibliography or direct information from lumberyard or lumber company like Weyerhaeuser.

Lesson 4 - Indoors - Have class compose letter requesting Biltmore Stick Covers, and then choose representative to write the letter on behalf of the entire class to:

Edward P. Cliff, Chief of the Forest Service
U.S. Department of Agriculture
Washington, D.C.

Lesson 5 - Outdoors

Develop the concept of "pace" as a means of measuring distance.

Note: a pace is every two steps and everyone's pace is different.

Have students determine their own pace by "pacing off" a marked 100' distance.

Lesson 5 - Outdoors (cont'd)

By using ratios, have each student determine the length of his own pace in feet.
Using their own pace, have students measure the distance of 50 feet, 66 feet, and 150 feet.

Lesson 6 - Indoors - Review method of measuring distance by pace.
Conduct a drill and review exercise in which students compute the number of their own individual paces required to measure various distances.

Lesson 7 - Indoors - Discussion of non-commercial uses of forests.

1. Have pupils list non-commercial uses of a forest such as: Recreation, camping, open spaces, water recharge, water storage, research, hunting, fishing, hiking, sketching, "back to nature".
2. Have each student prepare arguments to advance his or her ideas of the values inherent in one or more of the listed uses.

Lesson 8 - Indoors
Have each student or group of students construct a Biltmore Stick by following directions found on the Biltmore Stick cover. If possible, have student committee consult local lumberyard or saw mill to find out the cost per board foot of lumber for the species of trees available for measurement in their area.

Lesson 9 - Outdoors
Review methods of determining distance by pace. Have each pupil compute the number of paces he must walk to measure off 66 feet. Read with pupils "Something Called Heritage" on the Biltmore Stick cover.
Demonstrate the technique of using a Biltmore Stick (follow directions listed on the Biltmore Stick cover).
Using references listed in the bibliography and Biltmore Sticks, have students locate and identify several types of trees and compute the commercial value of each.
Have small groups of students pace off a wooded square, 50' by 50', and compute the commercial value of the timber therein.

Lesson 10 - Indoors
Orally review the previous outdoor activity. Have students construct lessons to teach peers how to use the Biltmore Stick.
If another class seems receptive, let the students in your class teach the other students how to use a Biltmore Stick, and explain its purpose.

Lesson 11 - Indoors

Encourage students to write, debate or prepare oral presentation on such topics as:

1. A landscape without trees?
2. How much is a tree worth?
3. Forests are for hunting
4. Forests are for people
5. Forests are for animals
6. Forests are for insects
7. Forests are for naturalists
8. Do cities need trees?
9. Do forests need care?
10. Forests are for lumber
11. Forests are for paper

Lesson 12 - Indoors - The Use of Tree Keys

Have a "Master Tree Finder" by May Watts (or some tree key of equal simplicity) for each student.
Determine how a dichotomus tree key is used.
Have students "Key out" several tree species from samples brought into the classroom. Be sure to encourage students to use texts to corroborate the indications of the tree keys.

Materials and Equipment

1. 100 foot tape measure
2. furring strips, $\frac{1}{4}$" x $1\frac{1}{2}$" x 36"
3. Biltmore Stick covers from the U.S. Department of Agriculture
4. Tree Keys ("Master Tree Finder" by May Watts)
5. paper and pencils

Audiovisual or Other Sensory Aids

1. "Extra Forest Dollars" - U.S. Forest Service (color) 19 minutes
2. "Living Forest" - Syracuse University (color) 41 minutes
3. "Challenge of Forestry" - New York State Conservation Department (color) 22 minutes

Evaluation Procedure

1. Describe method for measuring progress toward the cognitive objectives.
2. Describe methods possible for measuring progress toward the affective objectives.
3. How can students indicate their impressions of their own progress to the teacher?
4. How can the teacher get student suggestions or criticisms of the learning climate developed during these studies?

Bibliography

1. Hug and Wilson, Curriculum Enrichment Outdoors, Harper and Row. Evanston, Ill., 1965
2. United States Department of Agriculture, Yearbook for 1949, "Trees"
3. United States Department of Agriculture, Yearbook for 1966, "Forest Products","Forest Products Statistics"
4. Vivian, V. Eugene and Norma T., The World Out-of-Doors, 1967
5. Watts, May T., Master Tree Finder, Nature Study Guide, Berkeley, Calif., 1963

WHITESBOG - '71 - PROPOSED CESC COMPLEX

Whitesbog, located near Browns Mills, is the name of the former J.J. White Company village, purchased in December, 1966, as part of New Jersey's Green Acres Land Acquisition Renewal Program. Whitesbog village, located on the outskirts of lands famous for cranberry and blueberry culture, has given its name to the surrounding 2,700 acres purchased with Green Acres funds. The tract has been annexed to Lebanon State Forest.

The village presently consists of 29 buildings, including processing sheds, barrel factory and warehouse, workers' cottages, homesteads, garages, and a former general store. The tract contains more than 600 acres of cranberry bogs which are periodically flooded by canals and sluice gates connected to several reservoirs fed by the Pole Bridge branch and related tributaries of the Rancocas Creek. More than 100 acres of blueberry fields are also located at Whitesbog.

Historically, portions of the land at Whitesbog have belonged to one family since 1857, when John A. Fenwick, purchased 108 acres of bog land. His son-in-law, Joseph J. White purchased more land, built the canals, sluice gates and reservoirs and created Whitesbog. In 1875, White founded the company bearing his name, for the production of cranberries.

White's eldest daughter, Elizabeth C. White, gained national and world fame because of her work in the development of the large size cultivated blueberries. In 1911, inspired by a paper on blueberries written by the late Dr. F.M. Coville, of the U.S. Department of Agriculture, Miss White began intensive research efforts at Whitesbog. Working with Dr. Coville and with local natives, often called "Pineys," she sought out hundreds of native blueberry plants to cultivate in the sandy soil of her father's cranberry farm. In 1916, the first crop of specially bred and cultivated blueberries went to market and created an agricultural sensation. Miss White and Dr. Coville continued their association and research until Dr. Coville's death in 1937. Their joint efforts greatly improved the economy of the pinelands and plants shipped from Whitesbog did the same for similar areas throughout the United States and foreign countries.

Dr. Thomas Darlington, Miss White's nephew and the present-day owner of the company, is developing a new tract for more efficient harvesting of cranberries on the south side of route #70, some two miles from Whitesbog. Dr. Darlington has designed and developed a cranberry harvesting machine. The White Company is leasing the use of the cranberry and blueberry fields and many of the buildings at Whitesbog, during this changeover period, until 1971.

Whitesbog - '71 - Proposed CESC Complex

Mr. Isaiah Haines, the vice-president and general manager, has been associated with the company for 56 years, and serves as a resource person for school and adult groups visitng CESC's temporary center at Mt. Misery.

Commissioner Robert A. Roe, of the New Jersey Department of Conservation and Economic Development, and his staff, have endorsed leasing to CESC a portion of the Whitesbog acreage as a site for a model center for environmental studies. A permanent location at Whitesbog would permit CESC to expand and enlarge its programs in Environmental Education, sponsor related projects and offer facilities for environmental research projects. Environmental research will provide for a "Conservation and Environmental Renewal and Development Program" for the Pine Barrens Complex--the largest single ecological region in New Jersey.

The Pine Barrens, with its low population density, abundant water resources and priceless unique ecological heritage is New Jersey's greatest opportunity for environmental planning to meet the population and land use challenge of the future. Funds for construction of the CESC complex will be sought from private and public sources, and hopefully from many New Jersey industries which would be served by the Conservation and Environmental Science Center.

The new buildings will be erected in the vicinity of an existing air strip and reservoir. This complex will provide a dining hall, library, dormitories, infirmary and office buildings, as well as study and research laboratories. The projected buildings have been designed by the architect-conservationist, Malcolm B. Wells, of Cherry Hill. His dynamic designs demonstrate an ecological harmony with the landscape at Whitesbog. The unique construction is projected to meet the needs of the 21st century, and suggest a revolutionary concept for future architecture.

Whitesbog - '71 - Proposed CESC Complex

WHAT TO SEE AT WHITESBOG

Cranberry bogs and sluice gates
Reservoirs and feeder canals
"Suningive," Miss Elizabeth C. White's home at Whitesbog
Whitesbog's village street and workers' houses
Workers' villages at "Rome" and Florence" areas
Cedar swamps and lowlands
Upland pine covered areas, Savanna lands
Cranberry and blueberry packing sheds (with permission)
Blueberry harvesting in season, during July and August
Cranberry harvesting in season, September 20 to November 1

! PRECAUTIONS !

The rules of availability and access to Lebanon State Forest permit hunting and fishing on many parts of the Whitesbog tract in appropriate seasons.

Children's groups should not enter the Whitesbog tract unless supervised by a member of the Conservation and Environmental Science Center staff and teachers from their own district.

CONSERVATION AND ENVIRONMENTAL SCIENCE CENTER
FOR SOUTHERN NEW JERSEY

Planning Environmental Education Experiences at a Practicum Center

Public concern for our deteriorating environments is apparent in the daily reports of all news media. Mounting interest in our pressured environments has sparked a slowly growing involvement in conservation and environmental education.

But, despite valiant efforts, environmental education is not a serious or pervasive curricular concern in most schools. The present intensified interest in our environments has generated a readiness for environmental education previously unknown in our schools.

A most fitting continuation of the experiences and studies at the Conservation and Environmental Science Center would be the sponsorship and development of environmental studies at a practicum center or during student teaching. This is possible in all majors and disciplines.

Educators, prominent citizens, federal agencies and private organizations interested in conservation and environmental education during the last 30 years have demonstrated the multi-disciplinary character of studies in conservation and environmental science.

The CESC is intensely interested in aiding the development of all such programs at all grade levels and in all existing school subjects or disciplines. Conducting environmental education experiences on or near the school grounds is called "on-site programs" to distinguish them from resident environmental education programs such as those held by the CESC, at the Methodist Conference Center.

To aid teachers who wish to initiate on-site environmental education, CESC is producing a series of curriculum guides at several grade levels, known as Environmental Instruction Plans. Examples may be found in Appendix C of this Handbook.

The hallmark of these plans is the utilization of the technique known as the indoor-outdoor-indoor program. This bit of jargon recognizes the fact that studies and activities away from the classroom must be preceded and followed by classroom instruction.

Taking a class to a strange learning situation requires preparation and organization understood by the entire class. The vivid learnings or the data and information collected at first hand require interpretation and discussion back in the classroom. Thus, the indoor-outdoor-indoor program.

During your stay at CESC, you and your practicum coordinator may wish to explore and possible to plan environmental education feasible at your practicum center. Members of the CESC staff will be ready to participate in such discussions upon your invitation. They are ready to share with you their experiences and their "tools-of-the-trade." In addition to the Environmental Instruction Plans, Many other curriculum materials suitable for on-site activities are available in our library. Please ask to see them.

The CESC Mobile Laboratory and Library is also available for your inspection. This trailer unit, with reference books and equipment, may be scheduled for use in any school district on or near a school site. Glassboro State College has a similar trailer which may also be utilized where scheduling permits.

If the learning climate at which you have observed and participated in are those you would want to provide as a teacher, you will want to try environmental education yourself. The CESC staff will do its utmost to help you get started.